Lumitester PD-20 Control Kit

Operation manual

NC60.1

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Thank you for purchasing the Lumitester PD-20 Control Kit.

To use this kit safely and correctly,

read this operation manual carefully and follow the instructions.

Kikkoman Biochemifa Company

Ver.1.0

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1. Please read first

This kit is used to check the indicated value of Lumitester PD-20.
Please do not use it for the other purposes.

Symbols

This operation manual uses following symbols for safe and proper use.

WARNING	“WARNING” indicates a potentially hazardous situations Which, if not avoided, could result in death or serious injury.
CAUTION	"CAUTION" indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury or damage to the equipment.

In addition to the above alert symbols and signal words, the following warning symbols are used in this manual to designate the degree of hazard and damage that might occur if this product is used incorrectly.

	Mandatory This symbol indicates a mandatory action.
	Prohibited This symbol indicates a prohibited action.
	Electrical shock hazard This symbol indicates a risk of electrical shock.
	Fire hazard This symbol indicates a risk of smoke emission or fire.
	Explosive hazard This symbol indicates a risk of explosion.
	Toxic hazard This symbol indicates a toxic substance risk.
	Corrosion hazard This symbol indicates a risk of corrosion.

Handling precautions

If an abnormal condition is found…

WARNING
When abnormality is observed, remove AC power cord from outlet immediately When abnormality is observed such as malfunction, burning smell, fuming etc., there is a danger of fire and burst. Make sure that fumes are extinguished, and contact the dealer or us. Never repair the instrument by yourself, as this is very dangerous.

Precautions during use

WARNING
Do not use chemicals that may generate flammable gases and do not use in an atmosphere containing flammable gases. Doing so may cause gas explosion in this unit.
Never attempt to remove any cover of this unit, or disassemble or repair any part of this product. Only our qualified service personnel are allowed to service this unit. This unit contains high internal voltages, so improper handling may cause electrical shock, fire or abnormal operation.
Do not plug or unplug the AC adaptor with wet or moist hands. Doing so may cause electrical shock, fire or malfunction.
When using the AC adaptor, always connect it to a power source ranging from AC 100V to 240V (50/60Hz). Failure to follow this instruction may cause electrical shock or fire, or damage this unit.
Never connect an AC power source to the AC adaptor input and RS-232C terminal. Doing so may cause electrical shock, fire or malfunction.
Do not expose this unit to water and do not handle it with wet hands. This unit is not water-proof, so water or moisture may cause electrical shock, fire or malfunction.

CAUTION	When thunder has occurred, please do not connect an AC/DC adaptor to an electric outlet.
	Use an AC/DC adaptor only at the time of charge. Pull out the AC/DC adaptor from an electric outlet and remove it from a light source, when you do not use it.
	 Do not cover the hole of this side. There are two holes of degassing in the side.
	Do not soil the glass of a luminescence part. If dirt and a crack are given to glass, light volume will change.

Other cautions

When you use this equipment, be careful of the following things.

- This equipment is Lumitester PD-20 exclusive use. Do not insert a light source or blank tube in Lumitester PD-10. Or do not insert to other company products.
- Do not move this equipment during measurement. It may cause an error of measurement.
- Do not incline this equipment during measurement. It may cause a measured value error.
- Be sure to take out a light source after measurement.
- Keep this equipment at least 50cm away from the electromagnetic noise source.
- Do not expose this equipment to liquids, reagents, and organic solvents. That may cause failure, discoloration and modification. If they are attached, wipe off immediately.
- Use it in the range of temperature (10-30ºC) and humidity (20-85%).
- Do not use it at the place where temperature changes violently.
- Do not use it at a place with sunlight or strong light. It may cause an error of measurement.
- Do not expose it to steam. Use it at the place without dewing.
- Do not expose it to corrosive gas.
- Use it at a place without vibration.
- Use it at a place with little dust.
- Do not put on unstable place or a dangerous place.
- Do not fall it or give a strong shock.
- Avoid the place where the wind of an air-conditioner hits directly.

Notes on installation or storage

WARNING	
	While using a light source, do not use the chemicals which flammable gas generates. Moreover, do not keep or install in flammable gas atmosphere. In this case, there is a risk of a gas explosion occurring inside equipment.
	Do not install or keep it in a place that water or chemicals may go into the equipment. If they going into the equipment, the circuit may short. Then fire or electric shock may occur as the result.

Other precautions during storage

When storing this unit, take the following precautions:

- Store this unit at temperatures from -10 to +50ºC and a humidity from 20 to 95%.
- Do not store this unit in locations directly exposed to steam and in locations where condensation occurs.
- Do not store this unit in locations where corrosive gases are generated.
- Do not use this unit in locations subject to vibration.
- Do not use this unit in locations exposed to excessive dust or debris.
- Do not leave this unit in unstable or hazardous locations. Do not apply excessive shock to this unit and do not drop it.
- Do not place this unit in locations where the temperature is extremely low or near heaters.
- Avoid using this unit in locations directly exposed to air flow from an air conditioner or fan.
- Do not place any object on this unit.

When moving or transporting this unit

When moving or transporting this unit, take the following precautions:
Always use the original carton and packing materials when transporting this unit.
Our warranty does not cover any damage or breakdown caused during transportation due to use of non-specified cartons and packing materials.

When moving this unit, always first disconnect the DC plug from the device, and then unplug the AC adaptor from the electrical outlet.

Disposal of this unit

When disposing of this unit, comply with the laws and regulations in your area.

WARNING	
	Do not put unit in fire. And do not burn it. There is risk of explosion or burst inside it.

2. List of contents

Light source :1

Blank tube :1

AC/DC adaptor :1

AC power cord
A plug type :1

AC power cord
C plug type :1

Case :1

- Operation manual :1
- Silica gel :1

3. Overview

The check of Lumitester PD-20 operation and the check of sensitivity can be performed by using this kit.

This kit can generate a stable light by adopting automatic light control using LED.

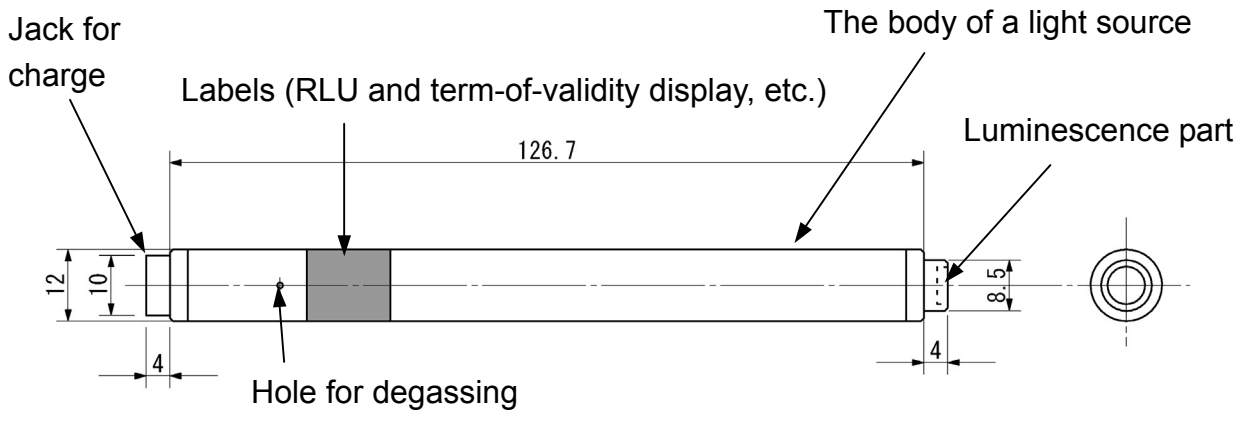
4. Features

- Electric method using LED
- The fluorescence by a radioactive material is not used
- Stable light is generated by automatic light control
- Battery exchanging is unnecessary with rechargeable
- Charge time is about 30 seconds
- Luminescence duration: About 15 minutes

5. List of components

Name	Specification and characteristic	Quantity
Light source (positive rod)		1
Blank tube (negative rod)	Typical 0 RLU	1
AC/DC adaptor for charge	Output DC 5V 3A	1
Power cable for Japan	A type	1
Power cable for Europe	C type	1
Operation manual	Ver.1.0	1
Case for transportation and storage.		1

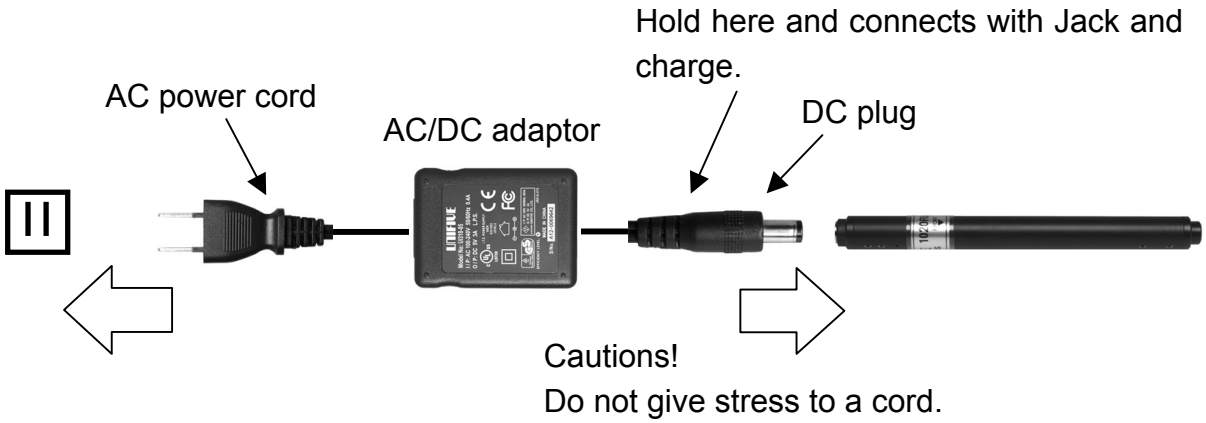
6. Dimension and part names



7. Operation method

Operate it by following method and notes.

7.1 Connect an AC power cord to outlet. And connect a DC plug to a jack for charge.

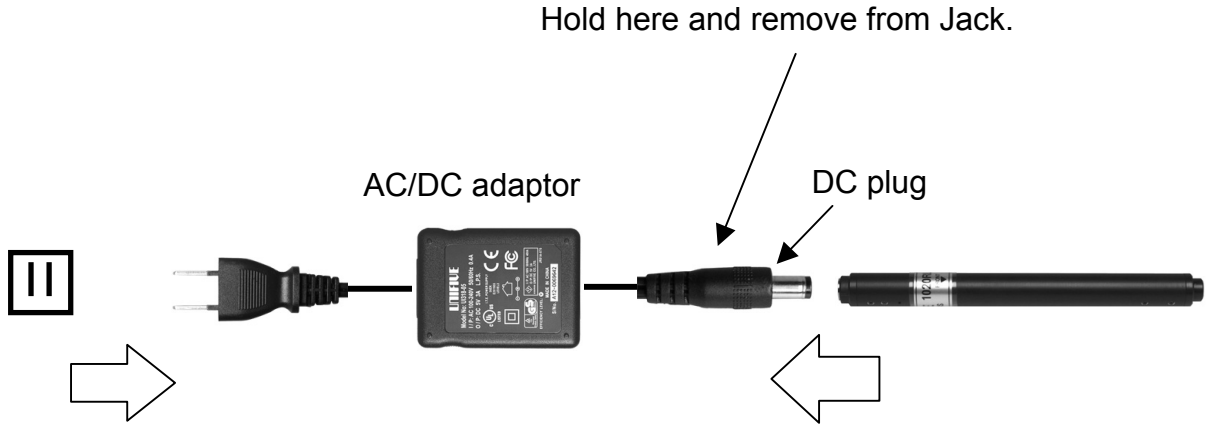


7.2 Charge for about 30 seconds.

* 30-second or more charge has no problem.
* Additional charge is possible.

7.3 Remove a DC plug from a jack for charge. And remove an AC power cord from outlet.

Also remove AC plug of an AC/DC adaptor from an AC power socket.



7.4 Start PD-20

Insert a light source into a measurement chamber.

▼ This mark is in front

7.5 Press Enter key of Lumitester PD-20 and measure.

<Caution>

Hold this unit vertically while measurement.
If you set diagonally or horizontally,
an error may increase.

In the case of error increases 1

Holding diagonally

In the case of error increases 2

Holding horizontally

7.6 Measure a blank tube like 7.4 and 7.5.

8. Judgment of Measurement Result

	Results	Treatment	When it has not improved
1	When RLU is less than 80% of a label display. (When a RLU display is 1000: 800 or less)	There is a possibility that the measurement chamber of PD-20 or the luminescence part window of the light source is dirty. Clean it off.	Failure of PD-20 or a recalibration may be required. Please contact the dealer or us.
2	When RLU is over 120% of a label display (When a RLU display is 1000: 1200 or more)	There is a possibility that the measurement chamber of PD-20 is dirty. Clean it off.	Failure of PD-20 or a recalibration may be required. Please contact the dealer or us.
3	When the measured value of a blank tube over 10RLU.	There is a possibility that the measurement chamber of PD-20 is dirty. Clean it off.	Failure of PD-20 or a recalibration may be required. Please contact the dealer or us.

When PD-20 doesn't display a normal value by 1 or 2, and when it displays a normal value by 3: The possibility of failure of a light source is also suspected.
Please send to the dealer or us together in repair of PD-20 or the case of recalibration.

9. Maintenance

9.1 Maintenance of a light source

The surface of the luminescence part is glass.
If this part is dirty, light volume will decrease.
In such a case, wipe with a dry cloth or paper such as tissue paper.
If this part is heavily dirty, wipe with a soft cloth damped with diluted mild detergent solution.

<Cautions>
Do not spill liquids, reagents nor organic solvents, etc. over the instrument.
If any liquid should be spilt on the instrument, wipe the liquid off immediately, dry the instrument.
When dirt remains: Take the same treatment as the above-mentioned maintenance.

10. Troubleshooting

WARNING	
   	When abnormality is observed, remove AC power cord from outlet immediately When abnormality is observed such as malfunction, burning smell, fuming etc., there is a danger of fire and burst. Make sure that fumes are extinguished, and contact the dealer or us. Never repair the instrument by yourself, as this is very dangerous.

11. Specification of a light source (positive rod)

Item	Contents
Light emitting device	Green LED
Center wavelength	Typ.545nm
Half width of spectrum	40nm (Typ.)
RLU value	It is displayed on the label of a light source.
Ambient temperature range	+10 - +30°C
Ambient humidity range	20 - 85% (Free from condensation)
Storage temperature range	0 - +35°C
Storage humidity range	20 - 95% (Free from condensation)
Internal power source	Electric double layer capacitor
Terminal for charge	Outer diameter: Φ5.5mm Inner diameter: Φ2.1mm (Center plus)
Input voltage	5.0V
Charging current	MAX 1A After the completion of charge: About 2 mA
Charge time	30 seconds or more
Operating time	15-minute after the completion of charge
Dimensions	Diameter: Φ12mm Length: 134.7mm
Weight	About 20 g (except AC/DC adaptor)

12. Specification of a blank tube (negative rod)

Item	Contents
RLU value	Typ. 0RLU
Tolerance of a RLU value	Minimum 0RLU. Maximum 10RLU
Dimensions	Diameter: about Φ12mm Length: about 149.5mm
Weight	About 10g

13. Calibration

This device is factory-calibrated, with a minimum period of validity as stated on the label. The calibration will only be valid if the instructions contained in this document are followed. Any non-recommended use may compromise this calibration. Following the stated period of validity, the device can be re-calibrated and re-labeled with new period of validity for a fee.

14. Warranty

A warranty period of the Lumitester PD-20 control kit is one year from the date of purchase, except that it is two years from the date of purchase in member states of EU where EU Directive 1999/44/EC is in effect.
If any failure is found in the workmanship or materials within this warranty period, we will repair or replace the defective parts without charge.
However, the warranty does not cover any of the following cases even if within the warranty period.

- The product has been misused, not following the operation manual. It includes, for example, such case where the failure was caused by the use with an Incorrect AC /DC adaptor.
- The product has been modified.
- The failure was caused by natural or man-made disasters, including but not limited to, earthquake, fire, lightning, flood and others. This warranty is limited to repair or replacement.
- In the case of damage to the peripheral equipment which occurred as a result of use, warranty does not cover.

15. Reliability

Quality and reliability of our products is very important to us. However, the breakdown occurs in the product including the semiconductor at a certain probability.
Therefore, pay attention to the following item before you use it.

- Use it safety to cause neither the accident resulting in injury or death nor the fire accident, etc.

A user's equipment may differ from the diagram of this manual, or the items mentioned in part about details. Please understand the situation beforehand.

16. Contact

Please tell us the question about directions for use to the following contact.

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